



How can we embed the principles of a circular economy into our practice?

In 2020, 70% of the world's end-of-life ships and floating offshore structures were decommissioned on three beaches in India, Bangladesh and Pakistan - typically with inadequate infrastructure, equipment and waste disposal. The International Labour Organization (ILO) classifies shipbreaking as one of the world's most dangerous occupations, with high levels of fatalities, injuries and work-related disease. Meanwhile, a lack of management of hazardous waste has severe consequences for surrounding communities and the environment.

This is emblematic of an insidious problem in our global society: waste. As it stands, there is a disconnect between the processes of design, production, use and disposal. Valuable raw materials are buried in landfill or burned in incinerators whilst we mine the earth for more. Data remains on cloud platforms squandering energy, long after its owner's life has ended. We are incentivised to over-produce and dump the consequences - out of sight, out of mind.

Broadly understood, a circular economy is one where products and materials are recycled, repaired and reused safely; waste from one industrial process becomes an input into another. Achieving a more circular economy demands a paradigm shift; a change of culture as much as a change in processes.

By nature, circular economy principles cannot be achieved by sticking to siloes. This challenge concerns all aspects of the supply chain and requires the input of diverse engineering perspectives: from mechanical engineers working on manufacturing and reprocessing, to chemical engineers improving recovery of materials, to data engineers focussing on the circularity of physical and virtual computer assets, or bioengineers innovating new materials - and more! It is time for joined-up, big picture thinking. The Academy is uniquely positioned to facilitate such interdisciplinary and international collaboration.

This discussion is an opportunity to share knowledge and perspectives from across the supply chain: from how we design to how we select materials, to how we manufacture, how we use engineered products and how we decommission them. Participants are encouraged to: share case studies and innovative solutions; discuss what sorts of skills and expertise needs to be mobilised to address this problem; and ideate on possible solutions.

The outcomes of these discussions could lead to concrete steps taken by The Academy: from informing programme activities; to funding research, education or innovation; to promoting partnerships; or developing policy recommendations.